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ABSTRACT

This report covers three support programs for at-risk high school students that include transfer to community colleges as a goal, in contrast to the majority of programs which stress preparation for entry into universities. The three programs included here are: (1) Vocational Plus; (2) Transfer Bound; and (3) Future Engineers. Vocational Plus begins service to students at the junior year in high school, providing them with academic, technical, and employment skills. Students enroll in community college courses and receive dual credit. Vocational Plus offers job shadowing opportunities, internships, and community college immigration with four-year university curriculum. Transfer Bound is a program within a larger network of programs called College Network. Transfer Bound is composed of two subgroups: (1) Scholarships and their Aftermath; and (2) the Mentorship Program. Students in the programs are eligible for scholarships, and can maintain these scholarships all the way through the receipt of a B.A. degree. The students attend meetings and retreats and maintain correspondence with sponsors. Unlike Vocational Plus, Transfer Bound is just beginning to consider community college students in addition to university students. Future Engineers is also a subprogram of a much larger network. It fosters engineering and mathematics skills through a format of college guidance. Future Engineers is operating at 37 community colleges and reaching approximately 1,000 students. (NB)

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Running head: EXTENDING SCHOOL-TO-COLLEGE PROGRAMS TO THE COMMUNITY COLLEGE

Extending School-to-College Programs to the Community College: Taking a Realistic View

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Abstract

Many foundations and others have supported special programs to assist "at-risk" students to make the transition from high school to college. In this report, we provide analyses of three programs that have extended beyond high school graduation to enrollment in a community college. The results indicate that the programs provide a "value added" that is needed to increase the likelihood of success.

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Extending School-to-College Programs to the Community College: Taking a Realistic View

Introduction and Background

Each year millions of dollars are spent on school to college programs to assist youth to attend college. These programs provide a focused set of experiences, above and beyond those provided during the regular school day. Typically these programs target students labeled "at risk" generally meaning the underprivileged, minority, or academically challenged. Programs have diverse goals such as high school graduation, improvement of academic skills, or are socially oriented providing an alternate recreational program to keep students "off of the streets." The source of funding, private or public, and the ages or grades of students served is yet another way that programs differ.

Special programs acknowledge the need for universal postsecondary training. A recent meeting hosted by the U.N. and attended by educators from more than 180 countries affirmed that more people need postsecondary education to be sufficiently skilled (Murray, 1999). Peter Drucker (1995) agrees, "knowledge has become the key resource for a nation's military and economic strength" (p. 37). Widespread access to college is likely the sole path to breaking monocultural stereotypes and extending opportunity regardless of the conditions and accruement of cultural capital. Although there is virtually universal agreement on the importance and need for education at all levels; access to, and success in college is not universal and remains highly correlated with race, socioeconomic status and other demographic statistics unrelated to student effort, goals, or true ability. America's schools face difficulties in serving its increasingly diverse audience. According to the latest census, 40% of those under the age of 18 are African American, Asian American, Hispanic, American Indian, or another "minority" (U.S. Census Bureau, 2000). Despite years of federal aid and

promising strategies, students enrolled in the country's low-income schools continue to lag behind in most measures of academic success (Levine, 1996). Simultaneously, selective colleges and universities are engaged in a process to ratchet up admissions criteria to compete for the nationally top students to increase the university's ratings. Thus to admit students who do not fit the traditional academic profile is a dangerous or even suicidal action for the nation's top postsecondary institutions.

The most widely used criteria for college/university academic quality is the annual report of the U.S. News and World Report. This trusted report considers seven areas in its rankings; academic reputation, retention, faculty resources, student selectivity, financial resources, graduation rate, and alumni giving rate. The student selectivity measure is based on criteria pertaining to the freshman class such as high school standing, scores on standardized admissions tests (SAT or ACT), and acceptance and enrollment rates. The reliance on the U.S. News and World Report as the "prestige-barometer" is yet another important deterrent to top universities accepting students who may jeopardize ratings.

It has long been established that students from low-income backgrounds who attend schools in low-income neighborhoods do not receive the same quality of educational services (Oakes, 2002). These students begin school with deficits that are only doomed to loom larger as they continue to attend schools with substandard conditions, hire inexperienced (or in the case of California and other states - non-credentialed) teachers, have insubstantial academic and social assistance programs, and must compete in neighborhoods with long lists of social problems. It is an unfortunate reality that low-income students attending high school in low-income neighborhoods are almost guaranteed to have lower scores on standardized admission

tests and thus to have an increased likelihood of being rejected from highly-rated colleges and universities.

It is unrealistic to expect universities to suddenly change their policies. Universities have never aimed to be open door institutions providing universal training. From their very beginnings, these institutions set their sites on the elite, the privileged, and the well to do. Historically a college education has been reserved for the select few. Similar to other goods on the market, a limited commodity raises the value of the specific good. Thus strict admissions criteria keep the value of co'' : high.

Collectively, the aforementioned conditions plus a lack of household familiarity with the college process and other significant obstacles make it increasingly difficult for students to enter the elite universities (Jun & Colyar, 2002). Further there is evidence that when low income students enter elite universities they are likely to have more difficulties than students from middle and high income areas and are more likely to leave (Jun &Colyar, 2002; Tinto, 1993). There is a definite need for special programs to assist students. Yet despite gallant efforts including a proliferation of school to college programs, the number of low-income students entering four-year universities remains low.

An alternative to initial entrance to the university is enrollment in a community college. In almost all cases community colleges have an open admissions policy, making acceptance not an issue. By way of the community college, many people have successfully transferred and received the identical diploma as their counterparts who entered the university as a freshman. Lest we give the impression that community colleges are equal in status and success to four-year universities, let us state that in no way is that the case. Retention rates at community colleges generally lag *far* behind those of four-year universities. And, while some

students are able to navigate transfer to a four-year university and subsequently obtain a bachelor's degree and beyond, the majority of students who enter the community college with high expectations never achieve their goals (Berkner, Cuccaro-Alamin, & McCormick, 1996). Further transferring to a four-year college at a time when native students have already adjusted, made close friends, have interacted with faculty, and fully understand the university process makes adjustment challenging. Sadly, many transfer students never feel fully integrated into their new universities. Thus, all conditions held constant, it is almost always better for students to enter the university as first year students and remain through graduation. However, one must acknowledge that the majority of minority and low-income students who go to college begin at a community college. Further, there are many baccalaureate (and beyond) holders who despite admission rejection by universities, attended a community college, transferred and successfully graduated. In the final analysis, by all indicators, going to a community college is far better than ending education at high school graduation (United States Census Bureau, 2002).

What's a support program to do?

As earlier stated, most school to college programs promote entry to elite universities. Certainly it is impressive, desirable, and encouraging to publicize the student who left the barrio to enter Harvard, Yale, or Stanford. Such success stories assist programs to garner much needed additional resources from foundations and private donors. But the rarity of students entering the upper echelon of universities is what makes these stories especially appealing. The truth is that the majority of low-income students who go to college will attend community colleges or state universities (Tierney & Hagedorn, 2002). Also, school to college programs generally view students who enter the community college as much lesser successes

or sometimes even as failures. Most programs do not promote or prepare students for initial entry to a community college and subsequent transfer to a university. Finally, once students graduate from high school they are generally no longer supported or assisted by the programs.

To assist students enrolled in special programs, programs must acknowledge 1) the difficulty and relative rarity of students entering elite institutions, 2) the likelihood that students will begin at a community college, 3) address issues of transfer, and most importantly 4) continue to support students who attend community colleges to increase the likelihood of transfer and subsequent success.

Programs that Specifically Support Community College Students

In the world of support programs for at-risk students, there are few that extend their services to community college students. In this manuscript, we first provide descriptions of three programs that are either specifically designed for community college students, or that extend their high school outreach to the community colleges. Following the program descriptions, we provide three separate sets of statistical tests of the efficacy of each program, followed by conclusions drawn from the collective analyses.

Through the Project *Students of College Preparation Programs in Postsecondary Institutions: Improving Program Effectiveness and Student Achievement,* funded by the Ford Foundation, researchers from the Center for Higher Education Policy Analysis at the Rossier School of Education at the University of Southern California studied 17 sites from 5 cities. This report covers the 3 programs that included community college students. Although each

of the three programs differed, they shared the common purpose of providing support through transfer to a four-year institution and beyond. The three programs studied were[1]:

- Vocational Plus
- Transfer Bound
- Future Engineers

Program One: Vocational Plus

Vocational plus is a unique program operating at most of the campuses of a very large community college district in a major metropolitan city. The program, funded primarily through state funds, Perkins Vocational and Technical Education Act funds, donations and grants, begins service to students at the junior year in high school. Students are ethnically diverse; almost half of the student population is African-American (45%), approximately one-fifth (18%) is Hispanic and one-fifth (20%) is White. Virtually none of the students have parents who went to college. More than half (56%) of the students are female.

The Vocational Plus program recruits students in high school and provides them with academic, technical and employment skills. High school juniors and seniors enroll in community college-level programs and receive both high school credit and up to 6 semester hours of college credit per semester. Upon completion of their high school education, students may continue their education in an associate degree or bachelor's degree program, or qualify for immediate employment that requires a high skill level at more competitive wages. Although few Vocational Plus students transfer to 4-year colleges, program leaders feel that it has contributed to a higher high school graduation and community college participation rate

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[1] All program names are pseudonyms.

by raising the expectations of student participants. Vocational Plus community college administrators also feel that they are providing an important service by preparing inner-city minority youth for more satisfying and rewarding jobs and careers. In 1997, the first year of an education to career initiative the program was able to enroll 869 students from 44 high schools.

To be eligible for the program, students must maintain a minimum of a C grade average in both their high school and college coursework. Students must also take the Community College Entrance Exam and achieve a score that indicates probable success (reading at 9th grade and higher, equivalent to English 101).

Vocational Plus can be termed a 2+2+2 program. Its services begin during the last two years of high school, continue through two additional years in the community college, and lastly extend to the final two years in the baccalaureate institution. The support structures and specific programs or disciplines offered at each of the participating college campuses differ, but most articulate with at least one four-year institution. The disciplines include auto theory, manufacturing, graphics, hospitality, and other occupational areas.

Common features of the Vocational Plus program include:

- Internship or practicum in field of study associated with the community college courses;
- Combined high school and college credit for college work completed during high school;
- Student counseling and guidance services at both the high school and community college;
- Opportunities to visit local 4-year colleges;
- Job shadowing or mentoring in addition to internships;
- Community college curriculum integration with 4 year university curriculum;
- Student preparation to pass certification, apprenticeship examinations in their field of study;

- 4-year college placement preparation.

Program Two: Transfer Bound

Transfer Bound is a program within a much larger network of programs called College Network. College Network provides services for students in a major western metropolitan city. College Network programs draw funding from large corporations as well as benevolent individuals who recognize the obstacles to college attendance that students from low-socioeconomic areas face. One of the College Network programs funds 450 students starting at the sophomore year in high school. The program begins by adopting 10th grade English or Social Studies classes and working with the students for the subsequent three-year period. Through weekly sessions in the sophomore year, and semi-weekly in the junior and senior years the program introduces students to critical awareness of themselves and their communities.

The community college program, Transfer Bound, is composed of two subprograms, 1) Scholarships and their Aftermath, and 2) the Mentorship Program. Scholarships are available for all College Network students. It is important to note that more than half (55%) of the College Network students attend community colleges after high school graduation and thus many scholarship recipients are community college students. A student is eligible for a scholarship for five years. Each student is paired with a specific scholarship sponsor who follows his/her progress throughout college. Students must write these sponsors twice a year. Community college students in Transfer Bound expect to maintain their scholarship through the community college experience and all the way through the receipt of a bachelor's degree. Some sponsors may even continue their support to graduate school. Transfer Bound students

attend meetings and retreats as scheduled through the College Network. Meetings may highlight social or academic topics, but usually include important information or skills related to transfer.

Another way the College Network includes community college students is through their internship program. The Internship Program is a cooperative effort with the private sector to help academically strong college students expand career goals and achieve greater workplace self-confidence. Students are exposed to a professional work environment, taught effective on-the-job technical and interpersonal skills, and provided with career path information.

Unlike Vocational Plus, the College Network series of programs does not see community college students as their main area of service. However, administrators are currently reviewing their policies and contemplating expansion of services for community college students.

Program Three: Future Engineers

Like the Transfer Bound program, the Future Engineers program is a subprogram of a much larger network that reaches throughout a western U.S. state. Future Engineers, is the community college component of a much larger high school outreach design that fosters engineering and mathematics skills through a format of college guidance. The high school program works closely within the school by conducting a regular class where students prepare for state competitions by building science-oriented projects, learn study skills, and work on problem solving. Both the high school and community college programs are funded through various federal and private grants and are without cost to students.

The community college component is operating at 37 community colleges reaching an estimated 1,000 students. The program extends its services to low-income students interested in a career related to math, science, or engineering. The Future Engineers Program maintains a campus office where students can meet, discuss their college plans with an academic counselor, arrange for tutoring in science and math related subjects, and prepare all necessary paperwork to effectively transfer to a college or university. There may also be occasional guest lectures. The goal of the program is to continue the curriculum started in the high schools; career exposure, college advisement, the establishment of expectations and goals related to a science-related career. In addition, the Future Engineers Program conducts regularly scheduled meetings and presentations of interest to the students. The non-academic components vary from campus to campus but generally include social events such as sporting competitions and BBQ's. Like the other two programs discussed, Future Engineers feels that the transfer rate to a four-year college or university is a major indicator of success.

Three Distinctive Methodological Approaches

Each of the three programs studied are distinct, unique, and impossible to compare. Further the three programs differ by the number of students served, geographic location, and specifics of goal. It must be noted that each of the programs, were evaluated in a broad sense and a lengthy report generated. In this paper, we present only a brief description of the program specific methodologies and the findings.

Vocational Plus

Vocational Plus provided us with recently collected reliable and extensive data for 304 students. For this program we proceeded to perform a secondary analysis on the data collected and supplied by American College Testing (ACT). The academic year 1999-2000 data was

collected from program participants in their junior and senior years of high school while students were concurrently attending the community college program. The studied outcomes were the role of Vocational Plus in student decisions to 1) finish high school, 2) decide on a college major, and 3) choose a life's occupation. As controls and independent variables, we entered students' self-reported high school GPA, gender, and level of perceived parent encouragement.

FINISH HIGH SCHOOL. Hispanic and female Vocational Plus students were more likely than males or non-Hispanics to report that Vocational Plus was instrumental in their determination to finish high school. An interesting finding was that the lower the student GPA, the more strongly students were affected by Vocational Plus in the decision to finish high school. Thus, Vocational Plus is likely to have larger effects on low achieving students than on high achieving students with respect to this most basic educational outcome. Highly significant was the finding that the higher students rated Vocational Plus as being efficient and helpful, the more they attributed the program with influencing their decision to finish high school.

DECIDING ON A COLLEGE MAJOR. Deciding on a college major is an important outcome because research has indicated that one of the leading reasons students drop out of college is their realization that they are in the wrong major and no longer wish to pursue their present educational course (Hagedorn, Maxwell, & Hampton, 2001). A highly significant predictor of Vocational Plus student's surety of major was their rating of the program's efficiency and helpfulness. Interestingly, parent encouragement, gender, and other variables were not significant in this prediction.

CHOOSING LIFE'S OCCUPATION. Student reported levels of Vocational Plus's efficiency and helpfulness was the only significant predictor of the "effects of the student's decision on "*Choosing the type of a job I wanted after graduating from high school*" while high school GPA, gender ($p = .316$), and parent encouragement ($p = .599$) were not significant predictors.

REMAINING IN VOCATIONAL PLUS AFTER HIGH SCHOOL GRADUATION. In this analysis we found that high school GPA was an important predictor of student desires to remain in the program and to continue to enroll in the community college after high school graduation. However, it is important to note that it was the students with lower GPA's who were more likely to plan on continuing in the same community college where their high school program was conducted. Lower GPA students may have felt comfortable in the community college environment and hence further attracted to the college, or lower GPA students may have felt that their options were limited by their academic performance therefore opting to enroll in the community college after high school graduation. Whatever the interpretation, it is clear that Vocational Plus had a positive effect on students who would be least likely to continue their education in a post secondary institution.

Transfer Bound

To test for specific effects of the Transfer Bound program, we administered questionnaires to community college program participants while they attended a special retreat. The research design for this program was a purposeful focus on the specific aspirations of students thus testing the success of the program's role in increasing goals for the low-income students that the program serves. Due to the nature of the retreats, time was limited, so after an initial introduction to the study, students were given a questionnaire and a

self-addressed stamped envelope and asked to fill it out and return it at their earliest convenience. Messages were related as a follow-up. Because the Transfer Bound program is a very small part of the College Network, and we only had access to students who attended the retreats, the sample size for our analysis was less than 50. Working with this small sample, we were cognizant of the statistical power constraints and likely type I errors that can be associated with small sample size research. Thus we chose our methodology carefully and with appropriate parsimony.

STUDENTS' OCCUPATIONAL ASPIRATIONS. One of the major goals of Transfer Bound is to assist students in making plans for their futures. Occupational goals are especially promoted. The program believes that through education, low-income students will increase their socioeconomic status and enter the middle and upper classes. One of the first steps in creating occupational goals is to decide upon a college major.

To test for occupational aspirations we compared the students' future job aspirations against the level of the occupations held by their parents. The measures for the occupational variables were derived from the work of E. Walter Terrie and Charles B. Nam from the Center for the Study of Population at Florida State University. Terrie and Nam have calculated a set of Occupational Status Scores (OSS) for 505 occupations (Terrie & Nam, 1994).

The Nam-Powers-Terrie Occupational Status Scores provide an index scale for the hierarchical ranking of occupations derived from census information. Historically, rankings and other measurement schemes rated occupations based on subjective judgments on the desirability or prestige of certain occupations. The Nam-Powers-Terrie Scores, however, are based on a formula using objective measures. First developed by Census Bureau statisticians

in the late 1950's for use with 1950 Census occupations, the scale has been revised each decade thereafter to provide the research community with a consistently updated set of measures of the socio-economic status of detailed census occupations. Each score indicates the approximate percentage of persons in the population in occupations having combined average levels of education and income below that for the given occupation. Since the occupational scores derived for the Nam-Powers-Terrie index represent the typical person in a given occupation, they do not tap all of the variability in occupational status. However, there appears to have been considerable stability in occupational stratification overall between 1980 and 1990 (Terrie & Nam, 1994).

Using this scheme, we coded student responses to the life occupations of their parents as well as the occupation to which they aspire. We then matched the parents' occupational status scores with the student-aspiration index scores and compared them accordingly. We also compared the aspirations of male and female students to learn of gender differences. The statistical methods employed were the paired samples and independent T-tests.

We performed the following analyses:

(1) Paired samples T-test for the test of differences between parent occupational status scores and Student planned-occupational status scores (OSS)

(2) Independent samples T-test on students scores by gender

(3) Paired samples T-test for the test of differences between parents' educational attainment and students' educational aspirations

(4) Independent samples T-test student educational aspirations by gender

GENERATIONAL EFFECTS. We found a statistical difference ($p < .001$) between parental occupational status and students occupational aspirations indicating that students'

scores were higher. We remain mindful that we are comparing the actual achievement of parents against students' aspiration that in many cases may not be a true outcome; nevertheless we offer this as some evidence of program impact.

GENDER DIFFERENCES—OCCUPATIONAL STATUS SCORES. We tested for gender differences in occupational aspirations through the use of an independent T-test. The results indicate that although there are differences in the average scores by gender, in favor of females, the results are not statistically significant. Although statistical significance is an important determinant of important differences we remained alert to the effects of the small sample size (17 men and 30 women). Small samples may mask important differences if the researcher relies solely on statistical significance. It is important to note that the effect size of the difference is approximately .3 standard deviations corresponds to a small to moderate effect[2].

TESTS FOR DIFFERENCES OF EDUCATION (PARENTS AND STUDENTS). We performed a paired samples T-test to determine statistical significant difference between the formal education reportedly obtained by students' parents and the students' educational aspirations. The results indicated very high and statistically significant differences ($p > .0001$) between the students' educational aspirations and parent's educational status.

TEST OF EDUCATIONAL ASPIRATIONS BY GENDER. We performed an independent T-test to identify differences by gender on educational aspirations. The results indicated that male students scored slightly lower than female students. However, the difference was not statistically significant ($t(34) = .66$, $p > .05$). As noted earlier, the

statistical significance of small samples may not be as illustrative as effect size. Again, the effect is somewhat sizeable at about .3 standard deviations.

While our work has not proven the Transfer Bound's effect, it does provide evidence that the students enrolled aspire beyond their current social and educational family status. Most students will be the first in their families to attend college. Time will tell if the lessons from the program have actually taken root, but at the present time, it appears aspirations are high.

Future Engineers

To better understand the effects of the Future Engineers program, we designed a special questionnaire for student program participants. During a regularly scheduled Future Engineers Directors' Meeting, the lead researcher explained the goals of the study and requested the assistance of each director in distributing either hardcopy versions or encouraging students to go online to answer the identical online version. Campus Directors received reminders, flyers, and posters to remind students coming into the campus office to take the survey. The final sample size was 232.

ANALYSIS. After the data was collected we created a scale or outcome measure to relate the unique mission of Future Engineers to the affective decisions and aspirations of its students. The resultant 8-point outcome scale was used as the dependent variable in our analyses. The scale was designed to capture students' aspirations of both their future educational achievements and occupational goals. The outcome scale ranges from 1 to 8 and was calculated as follows:

- 1 point. If student reports he/she will definitely TRANSFER to another institution

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[2] In behavioral sciences research a small effect size would be d = 0.2, a moderate effect size d = 0.5, and a large effect size would be d = 0.8. It can be argued that effect size is a better measure of research outcome than significance level.

- 2 points. If student reports he/she will definitely get an undergraduate degree
- 1 point. If student reports he/she will probably get an undergraduate degree
- 2 points. If student reports he/she will definitely get a master degree
- 1 point. If student reports he/she will probably get a master degree
- 2 points. If student reports he/she will definitely get a doctorate degree
- 1 point. If student reports he/she will probably get a doctorate degree
- 1 point. If student reports he/she is planning on pursuing a **S**cience, **M**athematics, or **E**ngineering (SEM) career

The distribution of the outcomes variable provided evidence of the appropriate variability thus indicating its suitability to serve as a dependent variable. The point designation for SEM careers was derived from student responses to the item: "Describe the job you plan to have after you have finished all of your education

In order to better understand how the various variables/factors contribute to the measured outcome scale, we performed two multiple regression analyses to parcel the variance of our variable of interest - outcomes. Regression Model One, included the entire sample, while Regression Model Two included only those subjects for whom English was not a native language. We found it necessary to isolate the non-native speakers because of the fairly large number of students for whom English is not native and because the first analysis indicated that having a native language other than English was important and may confound the tested relationships. Each of the analyses involved four blocks of variables. Block one consisted of demographic factors (parent education; gender, ethnicity, and socioeconomic status); block two consisted of factors pertaining to high school (high school GPA, and math and science coursework). The largest block was the third and contained factors pertaining to student affective behaviors and reactions to the Future Engineers program (helpfulness of the program, student rating of the program, enjoyment of program, determination, anxiety, self-

reported English ability, existence and level of education abroad, native language, efficacy, and adaptation). The last block consisted of factors pertaining to obstacles and pull factors (obstacles to college, financial need to work, and employment status).

The second model was almost identical to the first with the exception of the addition of a variable pertaining only to students whose native language was not English. For Model Two we added a measure of the self-reported ability to read, speak, write, and understand in their native language.

Future Engineers Model Summaries

The results of the first regression analysis using the full sample proved to be significant ($F = 2.365$, $df = 22, 137$; $p = .001$). An examination of the univariate coefficients (both the unstandardized b-weights and the standardized beta weights) revealed the most important variable in determining the outcome was the student rating of the helpfulness of Future Engineers in helping the student make decisions about his/her future. Level of reported efficacy/self-esteem was also a significant predictor of the outcomes scale.

The second analysis involving only the sample that reported having a native language other than English, also proved to be statistically significant ($F= 2.365$; $df = 22, 137$; $p = .001$). Interestingly, the predictors differed when the sample was reduced to this more homogeneous subsample. For these students the leading predictor of outcomes was the self-reported level of determination. Other important predictors were level of education abroad, anxiety, positive ratings of the Future Engineers program, and adaptation. It appears that for students for whom English was not native, to succeed in holding goals consistent with the Future Engineers program, students require high levels of determination, low levels of anxiety, and the ability to adapt to the circumstances that arise. The finding that higher levels

of education abroad predicted higher levels on the outcome scale was at first surprising. However, it may be that students who come to the US at older ages and enter the community colleges may be more determined to meet their occupational goals than students who enter the country at younger ages. It may be that these students better understand the benefits of community colleges.

Also surprising was that in both of the analyses, the number and type of advanced courses in mathematics and science were not significant predictors of the outcomes scale. Based on the literature, we expected a direct link between academics (operationalized as courses) and outcomes (operationalized as future educational goals and occupation expectations) (Hagedorn & Fogel, 2002). While we do not interpret this finding as indicative of the relative less importance of an academic emphasis for outcomes for community college programs, but rather an artifact of program type. Since Future Engineers recruits and promotes math and science coursework throughout its activities, students not pursuing this line of coursework generally do not remain with the program. Thus, although there was variability in the number and type of courses, the sample tended to have much higher participation in math and science than most community college students.

Conclusions Regarding Future Engineers

The overall conclusion is that the community college students enrolled in the Future Engineers program appear to be aligned with the mission of the program. Most aspire to transfer and to earn advanced degrees. There is evidence that Future Engineers may be more successful with students for whom English is not their native language. Since almost half of the Future Engineers sample in these analyses fit the non-English native language descriptor, we interpret this finding as positive. The significant predictors indicate that levels of

determination and adaptation are important for success as defined herein. Also important is the enjoyment and the student rating of the program. Finally, in line with the program's mission, many students aspire to occupations involving mathematics, science, engineering, and/or technology.

This study has its obvious limitations. We relied entirely on self-reported measures. Secondly, our outcomes are based on aspirations rather than on actions. Merely stating that the aspiration of earning a doctoral degree and becoming a nuclear physicist is certainly not the same as actually earning the degree and entering the occupation. Nonetheless at this time in the student's lives, aspirations are all that can be measured.

Collective Conclusions from all Programs

Despite the intended outcomes of high school to college programs, the accumulation of deficits of low-income students cannot be overcome with short-term fixes. In many cases it is totally unrealistic to expect that students whose lives have been filled with many distractions and deficits will be able to overcome significant barriers and enroll in an ivy league university by virtue of a special high school program. Rather than view community college enrollment as deviant to the program's goal it is more realistic to view it as an opportunity to continue the guidance and care that may lead to the acquisition of a college degree. Does support at the community college work? Although this question cannot be answered definitively, the three studies included in this manuscript provide evidence of "value added." Continuing support through community college years allows a student to mature into young adulthood with a support structure that may carry him/her through the tenuous transfer process.

What is needed? The first need is to change important minds. Two hindering fallacies need be to acknowledged and corrected. The first fallacy is that support should end at high school graduation. The second fallacy is that community college enrollment represents less than a success.

General acceptance of the fallacies creates giant barriers for programs venturing to support young adults. Finding the funds to support college students is a difficult task. Foundations and taxpayers are much more sympathetic to programs helping young children. College students are adults who many believe should be able to shoulder their own expenses and navigate their own needs. In our time of "extended adolescence" it is clear that while community college students are ostensibly adults, many will benefit from extended support structures. In light of the aforementioned fallacies, we purport the following points to aid programs to assist young adults to higher levels of success:

1. Programs must acknowledge that many (perhaps most) low-income students will not attend elite universities.

2. Programs should acknowledge that community college students need continued support for transfer goals and subsequently establish programs that have elastic terminations to support students beyond high school graduation.

3. While community college students may be older, they may not be significantly more resilient than high school students. Community college support should be funded at levels to assist larger numbers of students to success.

4. Programs at the community college level should continue academic assistance. Transferring to a four-year college or university is difficult. Students will find themselves tossed into a classroom with students who have had university training for at least two years. The competition for academic success will be much steeper than that at the community college

5. To enhance programmatic success, programs should invest in regular and objective evaluation. Once strong points are identified, they can be enhanced. Once weak points are identified, they can be improved.

6. As much as we like to promote college for everyone, the truth is that many community college students will not transfer and graduate. Community colleges provide many short-term certificates and associate degrees that lead to careers. Students interested in the "less than baccalaureate" educational paths should not be eliminated from support or viewed as programmatic failures.

In sum, the programs we included in this effort continue to provide services to students at the community college level. However, each is seriously threatened by lack of funds and each faces an uncertain path. While we find that support works, we are deeply troubled that support wanes. While we promote program amplification, programs have been thrust into program reduction. Although each of the programs we tested provided an option for support after the community college experience, none had a true support network that extended at least through the "transfer shock" period. Communication and/or collaboration with four-year colleges and universities is limited: students are not tracked beyond community college, and even the programs that are focused on occupational goals do not keep track of the occupations in which the student participants enter.

Programs are needed because community college students are at a disadvantage when compared to their four-year university counterparts. Although their aspirations are generally high, the reasons that necessitated attending a community college rather than a university are the same factors that continue to provide obstacles to transfer, the bachelor's degree, and beyond.

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